Scope of Work: Sole Power Mobile App Development

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1. Overview

This Scope of Work (SOW) outlines the development of a custom mobile application for the Town of Vail's Sole Power program. The app will serve as the primary platform for participants to track their human-powered commutes, engage with the program, and contribute to the overall goal of reducing vehicle miles traveled and greenhouse gas emissions within the Eagle County community. The app will be designed to be user-friendly, engaging, and accessible to a wide range of users, including those who may not have access to a compatible mobile device.

2. Executive Summary

App Maisters, a leading software development company, proposes to develop a comprehensive mobile application for the Town of Vail's Sole Power program. Our team possesses extensive experience in mobile app development, particularly in the transportation and sustainability sectors. We are confident in our ability to deliver a high-quality, innovative, and user-centric app that meets the specific requirements outlined in the RFP.

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4. Functional Details

1. Participant Role

1.1. Account Management

1.1.1. Sign Up

The sign-up process will involve a user-friendly form that collects essential information from new participants. This form will include fields for the user's name (first and last), email address, and password. To ensure data integrity, the email address field will be validated to confirm the correct format. Additionally, the password field will enforce a minimum length and complexity requirement to enhance security. Optional fields will allow users to indicate their preferred team and language, providing a personalized experience.

Upon successful validation of the submitted information, a new user account will be created in the database. This account will be assigned a unique user ID, a hashed password (using a secure hashing algorithm for security), and the user's provided information. The default role for newly created accounts will be "Participant," granting access to the app's core features. The account will also have an empty trip log and dashboard data, ready for the user to start logging their trips and tracking their progress.

Once the account creation is complete, a welcoming message will be displayed to the user, acknowledging the successful registration. This message will guide the user towards the next step, which could involve logging in to their newly created account, exploring the app's features, or joining a team if they had selected a team preference during registration.

1.1.2. Login

The login process will involve a simple form that prompts users to enter their email address and password.

To ensure secure access, the entered password will be hashed and compared to the stored hashed password in the database. This process will

utilize a secure session management system, such as JSON Web Tokens (JWT), to manage user sessions effectively.

Upon successful authentication, a user session will be established and session data, including the user ID and role, will be securely stored. To enhance security, session timeout and inactivity logout mechanisms will be implemented, automatically logging users out after a period of inactivity or when the session expires.

Based on the user's role (Participant), the system will redirect the user to the appropriate dashboard, providing a tailored experience for each user type.

1.1.3. Logout

The logout functionality will be designed to effectively destroy the current user session, ensuring that the user's access is terminated. This will involve clearing all session data from both the server and the client-side, effectively ending the user's session.

After successfully logging out, the user will be redirected to the login page or a designated landing page, providing a clear indication that they have successfully logged out of the app.

1.1.4. Profile Management

The profile page will display the user's essential information, including their name, email address, team (if joined), and language preference. Optionally, users can upload a profile picture to personalize their profile.

Users will have the ability to update their profile information, including their name, email address (with validation to ensure correct format), password (with validation and confirmation for security), team (if they wish to change), and language preference. They can also update their profile picture if desired.

To enhance security, users will be able to change their password. This process will require the user to enter their current password for verification, ensuring that they are authorized to make changes. They will then be prompted to enter a new password and confirm it, with password strength validation implemented to encourage strong passwords. The hashed password will be updated in the database to reflect the new password.

In case users forget their password, a "Forgot Password" functionality will be implemented. Users can enter their email address, and a password reset link will be sent to their email. This link will initiate a password reset flow, requiring the user to enter a new password and confirm it. The hashed password in the database will be updated with the new password, allowing the user to regain access to their account.

1.1.5. Team Management

A dedicated page will display a list of available teams, providing information such as the team name, description, number of members, and optionally, a team logo.

Users can join a team by selecting it from the list of available teams. However, joining a team will require administrator approval to ensure team integrity. Once approved, the user's team affiliation will be updated in the database, reflecting their membership in the chosen team.

Users can leave their current team by updating their team affiliation in the database to "None." This will effectively remove them from their current team.

Users can request to create a new team by providing a team name and description. This request will be sent to the administrator for approval. Upon approval, a new team will be created in the database, allowing the user to establish their own team within the app.

1.2. Trip Tracking & Logging

1.2.1. Trip Tracking (GPS)

The "Start Trip" button will initiate GPS tracking, requiring the user to grant location permission. Once permission is granted, the app will start recording GPS coordinates and timestamps, capturing the user's movement.

Users will be able to select the trip type from a dropdown menu or selection buttons, indicating the purpose of the trip. Options will include "Work," "Errand," "Social," and "Other," with the "Other" option allowing users to provide a custom description for their trip type.

Users will be able to select the mode of transportation from a dropdown menu or selection buttons, specifying how they are traveling. Options will include "Walk," "Bike," "Run," "E-bike," "Skate," and "Other," with the "Other" option allowing users to provide a custom description for their mode of transportation.

The app will utilize a distance calculation algorithm to determine the distance traveled based on the recorded GPS coordinates. This distance will be displayed in real-time, providing the user with a visual representation of their progress.

The "End Trip" button will stop GPS tracking and save the trip data to the database. This data will include the date, time, trip type, mode of transportation, distance traveled, start location (latitude/longitude), end location (latitude/longitude), and optionally, any trip notes the user may wish to add.

1.2.2. Manual Trip Entry

Users will be able to select the date of the trip using a date picker, allowing them to log trips that occurred in the past.

Users will be able to select the trip type from a dropdown menu or selection buttons, indicating the purpose of the trip. Options will include "Work," "Errand," "Social," and "Other," with the "Other" option allowing users to provide a custom description for their trip type.

Users will be able to select the mode of transportation from a dropdown menu or selection buttons, specifying how they are traveling. Options will include "Walk," "Bike," "Run," "E-bike," "Skate," and "Other," with the "Other" option allowing users to provide a custom description for their mode of transportation.

Users will be able to manually enter the distance traveled using a numeric input field. The input field will be validated to ensure that the entered value is a valid number.

The "Save Trip" button will save the manually entered trip data to the database, allowing users to log trips without relying on GPS tracking.

1.2.3. Trip Log

The trip log will display a list of all logged trips, providing information such as the date, time, trip type, mode of transportation, distance traveled, and optionally, any trip notes.

Users will be able to filter their trip log to view specific trips based on criteria such as date range, trip type, mode of transportation, and distance range. This filtering functionality will allow users to easily find and review specific trips.

Users will be able to edit the details of a logged trip, including the date, time, trip type, mode of transportation, distance traveled, and any trip notes. This functionality will allow users to correct any errors or update trip information as needed.

Users will be able to delete a logged trip if it is no longer relevant or accurate. This functionality will allow users to maintain a clean and accurate trip log.

1.3. Data & Analytics

1.3.1. Personal Dashboard

The personal dashboard will display cumulative data for the current season, which runs from Memorial Day to Columbus Day. This data will include the number of trips, total mileage, gas saved (calculated based on user-defined fuel efficiency), CO2e reduced (calculated based on user-defined fuel efficiency and CO2e emissions per gallon), and money saved (calculated based on user-defined fuel cost per gallon).

Users will be able to switch to view cumulative data for the current calendar year, providing a broader perspective on their transportation habits.

Users will be able to switch to view cumulative data for the lifetime of their account, offering a comprehensive overview of their transportation choices over time.

1.3.2. Leaderboards

The individual leaderboard will display a list of individual participants ranked by their cumulative data for the current season. This data will include the participant's display name, team (if joined), number of trips, total mileage, gas saved, CO2e reduced, and money saved.

The team leaderboard will display a list of teams ranked by their cumulative data for the current season. This data will include the team name, number of members, total mileage, gas saved, CO2e reduced, and money saved.

1.3.3. Historical Data

Users will be able to access historical data from previous seasons, allowing them to review their past transportation choices and track their progress over time. This functionality will display cumulative data for each previous season and allow users to filter historical data by season.

Users will be able to compare their current season data with previous seasons, providing insights into their transportation habits and progress. This functionality will allow users to identify trends and track their improvements over time.

1.4. Gamification & Engagement

1.4.1. Challenges

The app will display a list of current challenges, providing information such as the challenge name, description, goals, rewards, start date, and end date.

Users can participate in challenges by opting in. The app will track user progress towards challenge goals, providing real-time updates on their progress.

A progress bar or other visual indicator will display user progress towards challenge goals, providing a clear visual representation of their progress.

1.4.2. Rewards

The app will display a list of rewards that can be earned, providing information such as the reward name, description, value, and redemption requirements.

Users will automatically earn rewards based on their participation and achievements, such as completing challenges, reaching milestones (e.g., logging a certain number of trips), or achieving high rankings on leaderboards.

Users will be able to redeem earned rewards through a designated mechanism within the app. The app will track redeemed rewards to ensure that users can only redeem rewards once.

1.4.3. Social Features

Users will be able to share their progress on social media platforms such as Facebook and Twitter. This functionality will allow users to share their trip data, achievements, and leaderboard rankings with their social networks, encouraging engagement and promoting the Sole Power program.

Users will be able to send messages and encouragement to their teammates through a chat or messaging feature within the app. This functionality will foster a sense of community and support among team members, motivating them to participate actively in the Sole Power challenge.

The app will display leaderboard rankings, allowing users to see their position on the individual and team leaderboards. Real- time updates on leaderboard rankings will keep users engaged and motivated to improve their performance.

1.5. Information & Resources

1.5.1. Sole Power Program Information

The app will provide a comprehensive overview of the Sole Power program, including its goals, objectives, benefits, and history. This information will help users understand the program's purpose and the value of participating.

The app will provide detailed information about the program's goals and objectives, outlining the specific outcomes that the program aims to achieve.

The app will highlight the benefits of participating in the Sole Power program, emphasizing the environmental, health, financial, and social benefits of adopting sustainable transportation practices.

1.5.2. Transportation Resources

The app will integrate with a mapping API (e.g., Google Maps, Mapbox) to display bike lanes and paths. Users will be able to search for specific bike lanes and paths, and the app will provide directions and navigation assistance, making it easier for users to navigate bike-friendly routes.

The app will integrate with a mapping API (e.g., Google Maps, Mapbox) to display walking paths. Users will be able to search for specific walking paths, and the app will provide directions and navigation assistance, making it easier for users to explore walking routes.

The app will integrate with a public transit API (e.g., Transitland, Moovit) to display public transit routes. Users will be able to search for specific routes, and the app will provide real-time information on bus schedules and arrival times, making it easier for users to plan their public transit trips.

1.5.3. FAQs & Support

The app will provide answers to common questions about the Sole Power program and the app, addressing user concerns and providing helpful information.

Users will be able to contact support through a contact form or email address, allowing them to seek assistance with any issues or questions they may have.

1.6. Push Notifications

The app will send push notifications to keep users informed about new challenges, challenge deadlines, and their progress towards challenge goals. These notifications will help users stay engaged and motivated to participate in challenges.

The app will send push notifications to inform users about earned rewards and redemption opportunities. These notifications will encourage users to continue participating and claim their rewards.

The app will send push notifications to keep users informed about program updates, events, and announcements. These notifications will ensure that users are up-to-date on the latest developments and opportunities within the Sole Power program.

2. Administrator Role

2.1. Account Management

2.1.1. User Management

The administrator will have access to a page that displays a list of all registered users, providing information such as the user ID, name, email

address, team (if joined), language preference, account status (active/inactive), and date created. This functionality will allow administrators to easily view and manage user accounts.

Administrators will be able to search for specific users by user ID, name, or email address, making it easier to locate and manage individual accounts.

Administrators will be able to edit user profiles, updating information such as the user's name, email address (with validation to ensure correct format), password (with validation and confirmation for security), team (if they wish to change), language preference, and account status (active/inactive). This functionality will allow administrators to maintain accurate user information and manage user access.

Administrators will be able to delete user accounts, requiring confirmation before deleting an account to prevent accidental deletions. The deletion process will involve deleting all associated data, including the user's trip log, dashboard data, and any other relevant information.

2.1.2. Team Management

Administrators will have access to a page that displays a list of all teams, providing information such as the team ID, name, description, number of members, team status (active/inactive), and date created. This functionality will allow administrators to easily view and manage teams.

Administrators will be able to create new teams by providing a team name and description. The system will automatically assign a unique team ID and set the initial team status to "Active." Initially, the team will have no members.

Administrators will be able to edit team information, updating the team name, description, and status (active/inactive). This functionality will allow administrators to maintain accurate team information and manage team access.

Administrators will be able to delete teams, requiring confirmation before deleting a team to prevent accidental deletions. The deletion process will involve deleting all associated data, including team members, team leaderboard data, and any other relevant information.

The system will manage team creation requests, displaying a list of pending requests. Administrators will be able to approve or deny requests, updating the team status in the database accordingly. This functionality will ensure that only legitimate teams are added to the app.

Administrators will be able to add or remove members from teams. They will be able to search for users to add to a team, and the system will update the user's team affiliation in the database. This functionality will allow administrators to manage team membership and ensure that teams have the appropriate members.

2.2. Trip Management

Administrators will have access to a page that displays the trip log for all participants, providing information such as the date, time, user ID, trip type, mode of transportation, distance traveled, and optionally, any trip notes. Administrators will be able to filter trips by date range, user ID, trip type, mode of transportation, and distance range, allowing them to easily review and analyze trip data.

Administrators will be able to edit the details of a logged trip, including the date, time, trip type, mode of transportation, distance traveled, and any trip notes. This functionality will allow administrators to correct any errors or update trip information as needed.

Administrators will be able to delete a logged trip if it is no longer relevant or accurate. This functionality will allow administrators to maintain a clean and accurate trip log.

2.3. Data & Analytics

Administrators will have access to a comprehensive dashboard that displays cumulative data for the current season and lifetime of the program, including the total number of participants, total number of trips, total mileage, total gas saved, total CO2e reduced, and total money saved. The dashboard will also display individual and team leaderboard data, highlighting the top 10 individual participants and top 10 teams. Additionally, the dashboard will provide program statistics, such as the number of active challenges, number of rewards redeemed, and number of push notifications sent. Administrators will be able to export data in various formats (e.g., CSV, PDF) for further analysis and reporting.

Administrators will be able to export user data for reporting and analysis. This data will include user ID, name, email address, team (if joined), language preference, account status (active/inactive), date created, trip log data, and dashboard data. This functionality will allow administrators to gain insights into user behavior and program effectiveness.

2.4. Program Management

2.4.1. Challenge Management

Administrators will be able to create new challenges by providing a challenge name, description, goals, rewards, start date, and end date. The system will automatically assign a unique challenge ID and set the initial challenge status to "Active."

Administrators will be able to edit challenge details, including the challenge name, description, goals, rewards, start date, end date, and status (active/inactive). This functionality will allow administrators to manage challenges effectively and ensure that they are running smoothly.

Administrators will be able to delete challenges, requiring confirmation before deleting a challenge to prevent accidental deletions. The deletion

process will involve deleting all associated data, including challenge participants, challenge progress, and any other relevant information.

Administrators will be able to view and manage participants in challenges, tracking their progress and providing support as needed. This functionality will allow administrators to monitor challenge participation and ensure that participants are engaged and motivated.

2.4.2. Reward Management

Administrators will be able to create new rewards by providing a reward name, description, value, and redemption requirements. The system will automatically assign a unique reward ID and set the initial reward status to "Active."

Administrators will be able to edit reward details, including the reward name, description, value, redemption requirements, and status (active/inactive). This functionality will allow administrators to manage rewards effectively and ensure that they are aligned with program goals.

Administrators will be able to delete rewards, requiring confirmation before deleting a reward to prevent accidental deletions. The deletion process will involve deleting all associated data, including redeemed rewards and any other relevant information.

2.4.3. Push Notification Management

Administrators will be able to send push notifications to users, selecting a target audience (all users, specific teams, individual users) and creating custom notification messages. The system will track sent notifications and delivery status, providing administrators with insights into notification effectiveness.

Administrators will be able to schedule push notifications for future dates and times, allowing them to plan and deliver notifications strategically. This functionality will ensure that notifications are delivered at the most appropriate time, maximizing their impact.

2.4.4. Content Management

Administrators will be able to update program information, FAQs, and resources through a user-friendly interface. The system will implement version control to track changes, ensuring that administrators have a record of all updates and can revert to previous versions if needed.

Administrators will be able to update maps and information about bike lanes, walking paths, and public transit routes through a system that integrates with a mapping API (e.g., Google Maps, Mapbox). This functionality will allow administrators to maintain accurate and up-to-date transportation information, providing users with the most relevant and helpful resources.

2.5. System Administration

Administrators will have access to a secure interface for viewing and editing user data, allowing them to manage user accounts and ensure data integrity. The system will implement data security measures to protect user information, ensuring that sensitive data is handled responsibly.

The system will log all user actions and system events, providing administrators with a record of all activity within the app. Administrators will have access to a secure interface for viewing system logs, allowing them to troubleshoot issues, monitor system performance, and identify potential security threats. The system will implement log rotation and archiving mechanisms to ensure that logs are managed effectively and efficiently.

The app will implement security measures to protect the app and user data, including authentication and authorization mechanisms, data encryption, and access control. The system will also undergo regular security audits and vulnerability assessments to identify and address potential security risks, ensuring that the app and user data are protected from unauthorized access and malicious attacks.

5. Non-Functional Requirements

5.1. Performance

The Sole Power mobile app will be designed to deliver a seamless and responsive user experience across all supported platforms. The app will be optimized for speed and efficiency, ensuring quick loading times and smooth navigation. The app will be able to handle a high volume of user activity, including simultaneous logins, trip tracking, and data updates.

5.1.1. Response Time

The app will respond to user actions within a reasonable timeframe, ensuring a smooth and engaging user experience. The target response time for all user actions, including loading screens, data retrieval, and navigation, will be under 2 seconds.

5.1.2. Scalability

The app will be designed to accommodate a growing user base and increasing data volume. The architecture will be scalable to handle future growth and expansion of the Sole Power program.

5.2. Security

The security of user data is paramount. The app will implement robust security measures to protect user information from unauthorized access, modification, or disclosure.

5.2.1. Data Encryption

All user data, including personal information, trip logs, and other sensitive data, will be encrypted both in transit and at rest. This will ensure that data is protected from unauthorized access even if the device is lost or stolen.

5.2.2. Authentication and Authorization

The app will utilize secure authentication mechanisms to verify user identities and restrict access to authorized users. Two-factor authentication will be implemented to enhance security.

5.3. Reliability

The app will be designed to be reliable and stable, ensuring consistent performance and minimal downtime.

5.3.1. Error Handling

The app will implement comprehensive error handling mechanisms to prevent crashes and ensure a smooth user experience. Errors will be logged and monitored to identify and address potential issues.

5.3.2. Backup and Recovery

Regular backups of user data and app configurations will be implemented to ensure data recovery in case of system failures or data loss.

5.4. Usability

The app will be designed with a focus on user-friendliness and accessibility. The user interface will be intuitive and easy to navigate, ensuring a positive user experience for all users, regardless of their technical expertise.

5.4.1. User Interface Design

The app will feature a clean, modern, and visually appealing user interface that aligns with the branding and messaging of the Sole Power program. The design will be consistent across all platforms and devices.

5.4.2. Accessibility

The app will be designed to be accessible to users with disabilities. This will include features such as screen reader compatibility, large font options, and color contrast adjustments.

5.5. Maintainability

The app will be designed for easy maintenance and updates. The code will be well-documented and organized, allowing for efficient troubleshooting and future enhancements.

5.5.1. Code Documentation

All code will be thoroughly documented to facilitate understanding and maintenance. This will include comments, code structure, and design patterns.

5.5.2. Version Control

The app will be developed using a version control system to track changes and facilitate collaboration. This will allow for easy rollback to previous versions if necessary.

6. Reports

The app will generate various reports to provide insights into user activity, program participation, and overall program effectiveness. These reports will be accessible to authorized users, including Town of Vail staff and program administrators.

6.1. User Activity Reports

These reports will provide detailed information on individual user activity, including trips logged, miles traveled, gas saved, CO_2e reduced, and money saved.

6.2. Program Participation Reports

These reports will provide an overview of program participation, including the number of active participants, teams formed, and overall miles logged.

6.3. Program Effectiveness Reports

These reports will analyze the impact of the Sole Power program, including the reduction in vehicle miles traveled, greenhouse gas emissions, and

overall community engagement.

7. Compliance

The app will comply with all applicable laws and regulations, including those related to data privacy, security, and accessibility.

7.1. Data Privacy

The app will comply with all applicable data privacy laws, including the General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA).

7.2. Security

The app will comply with all applicable security standards, including those related to data encryption, authentication, and authorization.

7.3. Accessibility

The app will comply with all applicable accessibility standards, including the Web Content Accessibility Guidelines (WCAG).

8. Tools and Operating Systems

The app will be developed using industry-standard tools and technologies, ensuring compatibility with all supported platforms.

8.1. Development Tools

The development team will utilize industry-standard tools for mobile app development, including:

- **Programming Languages:** Swift (iOS), Kotlin (Android)
- **Integrated Development Environments (IDEs):** Xcode (iOS), Android Studio (Android)
- **Version Control System:** Git
- **Cloud Services:** AWS, Azure, Google Cloud

8.2. Operating Systems

The app will be compatible with the following operating systems:

- **iOS:** Version 14 and above
- **Android:** Version 8 and above

9. Roles and Responsibilities

9.1. App Maisters

- **Project Manager:** Responsible for overall project management, including planning, execution, and monitoring.
- **Development Team:** Responsible for designing, developing, and testing the app.
- **Quality Assurance (QA) Team:** Responsible for ensuring the quality and functionality of the app.

9.2. Town of Vail

- **Environmental Sustainability Manager:** Responsible for providing project requirements, feedback, and approval.
- **Sole Power Program Administrator:** Responsible for providing program-specific information and guidance.

10. Deliverables

10.1. Mobile App

- A fully functional mobile app for iOS and Android platforms, meeting all the requirements outlined in the RFP.
- Comprehensive documentation for the app, including user manuals, technical specifications, and API documentation.

10.2. Training

- Training materials for Town of Vail staff on how to use and manage the app.
- On-site training sessions for Town of Vail staff.

10.3. Ongoing Support

- One year of ongoing technical support for the app, including bug fixes, updates, and maintenance.

11. Assumptions

- The Town of Vail will provide access to all necessary data and resources for the development of the app.

- The Town of Vail will provide timely feedback and approval on all deliverables.
- The Town of Vail will have a dedicated point of contact for communication and coordination.

12. HIPAA-PHI Compliance Data Encryption

While the RFP does not explicitly mention HIPAA-PHI compliance, App Maisters understands the importance of protecting sensitive user data. We will implement robust security measures to ensure that all user data is handled in accordance with best practices for data privacy and security. This includes:

- **Data Encryption:** All user data, including personal information, trip logs, and other sensitive data, will be encrypted both in transit and at rest.
- **Secure Storage:** User data will be stored in secure cloud environments with access controls and monitoring.
- **Regular Security Audits:** We will conduct regular security audits to ensure that the app and its infrastructure meet the highest security standards.

App Maisters is committed to delivering a high-quality, secure, and user-friendly mobile app for the Town of Vail's Sole Power program. We are confident that our experience, expertise, and commitment to excellence will ensure the successful implementation of this project.